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What is claimed is:

1. An isolated nucleic acid molecule selected from the group consisting of:

(a) a nucleic acid molecule comprising at least about 150 nucleotides,

wherein said nucleic acid molecule comprising at least about 150 nucleotides hybridizes,

5 in a solution comprising 1X SSC and 0% formamide, at a temperature of about 50°C, to a

nucleic acid molecule comprising a nucleic acid sequence selected from the group

consisting of SEQ ID NO:14, SEQ ID NO:16, SEQ ID NO:17, SEQ ID NO:19, SEQ ID

NO:20, SEQ ID NO:22, SEQ ID NO:34, SEQ ID NO:36, SEQ ID NO:37, SEQ ID

NO:39, SEQ ID NO:40, SEQ ID NO:42, SEQ ID NO:43, SEQ ID NO:45, and a nucleic

10 acid sequence encoding a protein comprising the amino acid sequence of SEQ ID NO:33

and a complement thereof; and

(b) a nucleic acid molecule comprising a fragment of any of said

nucleic acid molecules of (a) wherein said fragment comprises at least about 15

nucleotides.

2. The nucleic acid molecule of Claim 1, wherein said nucleic acid molecule

comprises a nucleic acid sequence that encodes a *Der* HMW-map protein.

3. The nucleic acid molecule of Claim 1, wherein said nucleic acid molecule

is selected from the group consisting of nDerf98<sub>1752</sub>, nDerf98<sub>1665</sub>, nDerf98<sub>1608</sub>,

nDerp98<sub>1621</sub>, nDerp98<sub>1527</sub>, nDerp98<sub>1470</sub>, and nDerf60<sub>510</sub>.

20 4. The nucleic acid molecule of Claim 1, wherein said nucleic acid molecule

is selected from the group consisting of:

(a) a nucleic acid molecule comprising a nucleic acid sequence

selected from the group consisting of SEQ ID NO:14, SEQ ID NO:16, SEQ ID NO:17,

SEQ ID NO:19, SEQ ID NO:20, SEQ ID NO:22, SEQ ID NO:34, SEQ ID NO:36, SEQ ID NO:37, SEQ ID NO:39, SEQ ID NO:40, SEQ ID NO:42, SEQ ID NO:43, SEQ ID NO:45; and

5 (b) a nucleic acid molecule comprising an allelic variant of a nucleic acid molecule of (a).

5. The nucleic acid molecule of Claim 1, wherein said nucleic acid molecule is selected from the group consisting of:

10 (a) a nucleic acid molecule comprising a nucleic acid sequence that encodes a protein having an amino acid sequence selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7, SEQ ID NO:8, SEQ ID NO:9, SEQ ID NO:10, SEQ ID NO:11, SEQ ID NO:12, SEQ ID NO:13, SEQ ID NO:15, SEQ ID NO:18, SEQ ID NO:21, SEQ ID NO:23, SEQ ID NO:24, SEQ ID NO:29, SEQ ID NO:30, SEQ ID NO:31, SEQ ID NO:32, SEQ ID NO:33, SEQ ID NO:35, SEQ ID NO:38, SEQ ID NO:41, and SEQ ID NO:44; and

15 (b) a nucleic acid molecule comprising an allelic variant of a nucleic acid molecule encoding a protein having an amino acid sequence of (a).

6. A recombinant molecule comprising a nucleic acid molecule as set forth in Claim 1 operatively linked to a transcription control sequence.

20 7. A recombinant virus comprising a nucleic acid molecule as set forth in Claim 1.

8. A recombinant cell comprising a nucleic acid molecule as set forth in Claim 1.

9. An isolated protein encoded by a nucleic acid molecule selected from the group consisting of:

(a) a nucleic acid molecule comprising at least about 150 nucleotides, wherein said nucleic acid molecule comprising at least about 150 nucleotides hybridizes, 5 in a solution comprising 1X SSC and 0% formamide, at a temperature of about 50°C, to a nucleic acid molecule comprising a nucleic acid sequence selected from the group consisting of SEQ ID NO:16, SEQ ID NO:19, SEQ ID NO:22, SEQ ID NO:36, SEQ ID NO:39, SEQ ID NO:42, SEQ ID NO:45, and a complement of a nucleic acid sequence encoding a protein comprising the amino acid sequence SEQ ID NO:33; and

10 (b) a nucleic acid molecule comprising a fragment of any of said nucleic acid molecules of (a), wherein said fragment comprises at least about 15 nucleotides.

15 10. The protein of Claim 9, wherein said protein, when administered to an animal, elicits an immune response against a *Der* HMW-map protein.

11. The protein of Claim 9, wherein said protein is selected from the group 20 consisting of:

(a) a protein encoded by a nucleic acid molecule having a nucleic acid sequence selected from the group consisting of: SEQ ID NO:14, SEQ ID NO:17, SEQ ID NO:20, SEQ ID NO:34, SEQ ID NO:37, SEQ ID NO:40, SEQ ID NO:43, and the coding strand of a nucleic acid sequence encoding a protein comprising the amino acid sequence SEQ ID NO:33; and

(b) a protein encoded by a nucleic acid molecule comprising an allelic variant of a nucleic acid molecule comprising any of said nucleic acid molecules of (a).

12. The protein of Claim 9, wherein said protein is selected from the group consisting of:

(a) a protein comprising an amino acid sequence selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7, SEQ ID NO:8, SEQ ID NO:9, SEQ ID NO:10, SEQ ID NO:11, SEQ ID NO:12, SEQ ID NO:13, SEQ ID NO:15, SEQ ID NO:18, SEQ ID NO:21, SEQ ID NO:23, SEQ ID NO:24, SEQ ID NO:29, SEQ ID NO:30, SEQ ID NO:31, SEQ ID NO:32, SEQ ID NO:33, SEQ ID NO:35, SEQ ID NO:38, SEQ ID NO:41, and SEQ ID NO:44; and

(b) a protein encoded by an allelic variant of a nucleic acid molecule encoding a protein comprising any of said amino acid sequences of (a).

13. An isolated antibody that selectively binds to a protein as set forth in Claim 9.

14. The protein of Claim 9, wherein said protein selectively binds to IgE.

15. The protein of Claim 9, wherein said protein comprises an epitope having at least one identifying characteristic selected from the group consisting of:

- (a) said epitope is resistant to  $\beta$ -elimination of peptides;
- (b) said epitope is resistant to Proteinase-K digestion; and
- (c) said epitope is reactive to a test designed to detect glycosylated

20 proteins, wherein said epitope binds to an IgE selected from the group consisting of canine IgE from dogs allergic to mites and feline IgE from cats allergic to mites.

16. A therapeutic composition for treating an allergic response to a mite, said therapeutic composition comprising a desensitizing compound selected from the group consisting of:

(a) an isolated mite allergenic protein, wherein said mite allergenic protein is encoded by a nucleic acid molecule that hybridizes under stringent hybridization conditions with the complement of a nucleic acid molecule that encodes an amino acid sequence selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7, SEQ ID NO:8, SEQ ID NO:9, SEQ ID NO:10, SEQ ID NO:11, SEQ ID NO:12, SEQ ID NO:13, SEQ ID NO:15, SEQ ID NO:18, SEQ ID NO:21, SEQ ID NO:23, SEQ ID NO:24, SEQ ID NO:29, SEQ ID NO:30, SEQ ID NO:31, SEQ ID NO:32, SEQ ID NO:33, SEQ ID NO:35, SEQ ID NO:38, SEQ ID NO:41, and SEQ ID NO:44;

(b) a mimotope of said mite allergenic protein;

(c) a mutein of said mite allergenic protein;

(d) an isolated nucleic acid molecule selected from the group

(d) an isolated nucleic acid molecule selected from the group

consisting of:

(i) a nucleic acid molecule comprising at least about 150 nucleotides, wherein said nucleic acid molecule comprising at least about 150 nucleotides hybridizes, in a solution comprising 1X SSC and 0% formamide, at a temperature of about 50°C, to a nucleic acid sequence selected from the group consisting of SEQ ID NO:14, SEQ ID NO:16, SEQ ID NO:17, SEQ ID NO:19, SEQ ID NO:20, SEQ ID NO:22, SEQ ID NO:34, SEQ ID NO:36, SEQ ID NO:37, SEQ ID NO:39, SEQ ID NO:40, SEQ ID NO:42, SEQ ID NO:43, SEQ ID NO:45 and a nucleic acid sequence

encoding a protein comprising the amino acid sequence SEQ ID NO:33 and a complement thereof; and

(ii) a nucleic acid molecule comprising a fragment of any of said nucleic acid molecules of (i), wherein said fragment comprises at least about 15 nucleotides;

(e) an antibody to said mite allergic protein; and

(f) an inhibitor of binding of said mite allergic protein to IgE.

17. The composition of Claim 16, wherein said composition further comprises a component selected from the group consisting of an excipient, an adjuvant, and a carrier.

18. The composition of Claim 16, wherein said desensitizing compound is administered to an animal as a naked nucleic acid molecule.

1.0

19. An assay kit for testing if an animal is susceptible to or has an allergic response to a mite, said kit comprising:

(a) an isolated protein encoded by a nucleic acid molecule that hybridizes under stringent hybridization conditions with the complement of a nucleic acid molecule that encodes an amino acid sequence selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7, SEQ ID NO:8, SEQ ID NO:9, SEQ ID NO:10, SEQ ID NO:11, SEQ ID NO:12, SEQ ID NO:13, SEQ ID NO:15, SEQ ID NO:18, SEQ ID NO:21, SEQ ID NO:23, SEQ ID NO:24, SEQ ID NO:29, SEQ ID NO:30, SEQ ID NO:31, SEQ ID NO:32, SEQ ID NO:33, SEQ ID NO:35, SEQ ID NO:38, SEQ ID NO:41, and SEQ ID NO:44; and

(b) a means for determining if said animal is susceptible to or has said allergic response, wherein said means comprises use of said protein to identify animals susceptible to or having allergic responses to mites.

20. A method to identify an animal susceptible to or having an allergic response to a mite, said method comprising:

(a) contacting an isolated protein that is encoded by a nucleic acid molecule that hybridizes under stringent hybridization conditions with the complement of a nucleic acid molecule that encodes an amino acid sequence selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7, SEQ ID NO:8, SEQ ID NO:9, SEQ ID NO:10, SEQ ID NO:11, SEQ ID NO:12, SEQ ID NO:13, SEQ ID NO:15, SEQ ID NO:18, SEQ ID NO:21, SEQ ID NO:23, SEQ ID NO:24, SEQ ID NO:29, SEQ ID NO:30, SEQ ID NO:31, SEQ ID NO:32, SEQ ID NO:33, SEQ ID NO:35, SEQ ID NO:38, SEQ ID NO:41, and SEQ ID NO:44 with antibodies of an animal; and

(b) determining immunocomplex formation between said protein and said antibodies, wherein formation of said immunocomplex indicates that said animal is susceptible to or has said allergic response.

15 21. The method of claim 20, wherein said step of contacting is performed *in vitro* or *in vivo*.

22. A method to desensitize a host animal to an allergic response to a mite, said method comprising administering to said animal a therapeutic composition comprising a desensitizing compound selected from the group consisting of:

(a) an isolated mite allergenic protein, wherein said mite allergenic protein is encoded by a nucleic acid molecule that hybridizes under stringent hybridization conditions with the complement of a nucleic acid molecule that encodes an amino acid sequence selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7, SEQ ID NO:8, SEQ ID NO:9, SEQ ID NO:10, SEQ ID NO:11, SEQ ID NO:12, SEQ ID NO:13, SEQ ID NO:15, SEQ ID NO:18, SEQ ID NO:21, SEQ ID NO:23, SEQ ID NO:24, SEQ ID NO:29, SEQ ID NO:30, SEQ ID NO:31, SEQ ID NO:32, SEQ ID NO:33, SEQ ID NO:35, SEQ ID NO:38, SEQ ID NO:41, and SEQ ID NO:44;

(b) a mimotope of said mite allergenic protein;  
(c) a mutein of said mite allergenic protein;  
(d) an isolated nucleic acid molecule selected from the group consisting of:

(i) a nucleic acid molecule comprising at least about 150 nucleotides, wherein said nucleic acid molecule comprising at least about 150 nucleotides hybridizes, in a solution comprising 1X SSC and 0% formamide, at a temperature of about 50°C, to a nucleic acid sequence selected from the group consisting of SEQ ID NO:14, SEQ ID NO:16, SEQ ID NO:17, SEQ ID NO:19, SEQ ID NO:20, SEQ ID NO:22, SEQ ID NO:34, SEQ ID NO:36, SEQ ID NO:37, SEQ ID NO:39, SEQ ID NO:40, SEQ ID NO:42, SEQ ID NO:43, SEQ ID NO:45 and a nucleic acid sequence

encoding a protein comprising the amino acid sequence SEQ ID NO:33 and a complement thereof; and

(ii) a nucleic acid molecule comprising a fragment of any of said nucleic acid molecules of (i), wherein said fragment comprises at least about 15 5 nucleotides;

(e) an antibody to said mite allergic protein; and

(f) an inhibitor of binding of said mite allergic protein to IgE.

23. The method of Claim 22, wherein said protein comprises an amino acid sequence selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7, SEQ ID NO:8, SEQ ID NO:9, SEQ ID NO:10, SEQ ID NO:11, SEQ ID NO:12, SEQ ID NO:13, SEQ ID NO:15, SEQ ID NO:18, SEQ ID NO:21, SEQ ID NO:23, SEQ ID NO:24, SEQ ID NO:29, SEQ ID NO:30, SEQ ID NO:31, SEQ ID NO:32, SEQ ID NO:33, SEQ ID NO:35, SEQ ID NO:38, SEQ ID NO:41, and SEQ ID NO:44.

24. The method of Claim 22, wherein said therapeutic composition further comprises a component selected from the group consisting of an excipient, an adjuvant and a carrier.

25. A method to produce a mite allergenic protein, said method comprising  
culturing a cell transformed with a nucleic acid molecule selected from the group  
consisting of: a nucleic acid molecule comprising at least about 150 nucleotides, wherein  
said nucleic acid molecule comprising at least about 150 nucleotides hybridizes, in a  
solution comprising 1X SSC and 0% formamide, at a temperature of about 50°C, to a  
nucleic acid sequence selected from the group consisting of SEQ ID NO:16, SEQ ID  
NO:19, SEQ ID NO:22, SEQ ID NO:36, SEQ ID NO:39, SEQ ID NO:42, SEQ ID  
NO:45 and a complement of a nucleic acid sequence encoding a protein comprising the  
amino acid sequence SEQ ID NO:33; and a nucleic acid molecule comprising a fragment  
of any of said nucleic acid molecules, wherein said fragment comprises at least about 15  
nucleotides.

26. A reagent comprising a non-proteinaceous epitope having at least one identifying characteristic selected from the group consisting of:

- (a) said epitope is resistant to  $\beta$ -elimination of peptides;
- (b) said epitope is resistant to Proteinase-K digestion; and
- 5 (c) said epitope is reactive to a test designed to detect glycosylated proteins,

wherein said epitope binds to an IgE selected from the group consisting of canine IgE from dogs allergic to mites and feline IgE from cats allergic to mites.

27. An isolated antibody that selectively binds to an epitope as set forth in  
10 Claim 26.

28. A therapeutic composition for treating an allergic response to a mite, said therapeutic composition comprising a desensitizing compound comprising the reagent of  
15 Claim 26.

29. An assay kit for testing if an animal is susceptible to or has an allergic response to a mite, said kit comprising the reagent of Claim 26 and a means for determining if said animal is susceptible to or has said allergic response, wherein said means comprises use of said reagent to identify animals susceptible to or having allergic responses to mites.

30. A method to identify an animal susceptible to or having an allergic response to a mite, said method comprising:

- (a) contacting the reagent of Claim 26 with antibodies of an animal;
- 20 and

(b) determining immunocomplex formation between said reagent and said antibodies, wherein formation of said immunocomplex indicates that said animal is susceptible to or has said allergic response.

31. A method to desensitize a host animal to an allergic response to a mite,  
5 said method comprising administering to said animal a therapeutic composition  
comprising a desensitizing compound comprising the reagent of Claim 26.